

### Request for License Information

If you would like more information about obtaining Alpha\_\_1 for use at your site, mail this request for license information to:

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Name	_____
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#### Hardware requirements

Currently, Alpha\_\_1 runs on the following machines:

- Vax (BSD Unix)
- MicroVax (Ultrix, X windows)
- Sun (Unix, X windows)
- Apollo (Domain/IX)
- Gould (UTX)

Graphics displays currently supported for interactive model construction include:

- Evans & Sutherland PS300
- Evans & Sutherland Multi-Picture System
- Silicon Graphics Iris
- Tektronix 4128/4129
- X Window System

Shaded raster images are produced in a run-length encoded format. A decoding program for these images is easily developed for most 24-bit color frame buffers. Images can be dithered to 8-bit frame buffers as well.

# Alpha\_\_1



## A Spline-based Geometric Modeling System



## The Alpha\_\_1 Solid Modeling System

Alpha\_\_1 is a solid modeling system for Computer Aided Design and Computer Aided Engineering. It uses a B-spline boundary representation, which allows description of solids with free-form surfaces.

### Features of Alpha\_\_1 include:

- Single, rich representation form throughout Alpha\_\_1.
- Interactive model construction and editing.
- Variety of model visualizations, including shaded raster and line images.
- Variety of model interrogation methods.
- Portable, extensible, integrated system.

## Specifications

### Representation

- Alpha\_\_1 uses arbitrary order, nonuniform rational B-splines.
- Object model is represented by a shell made of B-spline surfaces.
- Composite objects use boolean operators for combining shells.
- Attribute distributions can be associated with surface shapes.



### Interactive construction methods

- Interactive environment.
- Plane construction aids: points, lines, arcs, curves.
- Curve to surface operators: extrude, surface of revolution, sweep.
- Curve and surface fitting.

- Surface modification operators: e.g. bend, twist, warp, flatten, emboss.
- Surface construction operators: offset, blend, fill.

### Visualization methods

- Interactive line-drawing displays.
- Hidden-line rendering of solids.
- Shaded raster rendering, range of speeds and qualities.

### Model interrogation

- Extraction of mass properties from model.
- Finite Element analysis (pre- and post-processors, preliminary).
- Generation of N/C toolpath data (preliminary).

